discussion_2

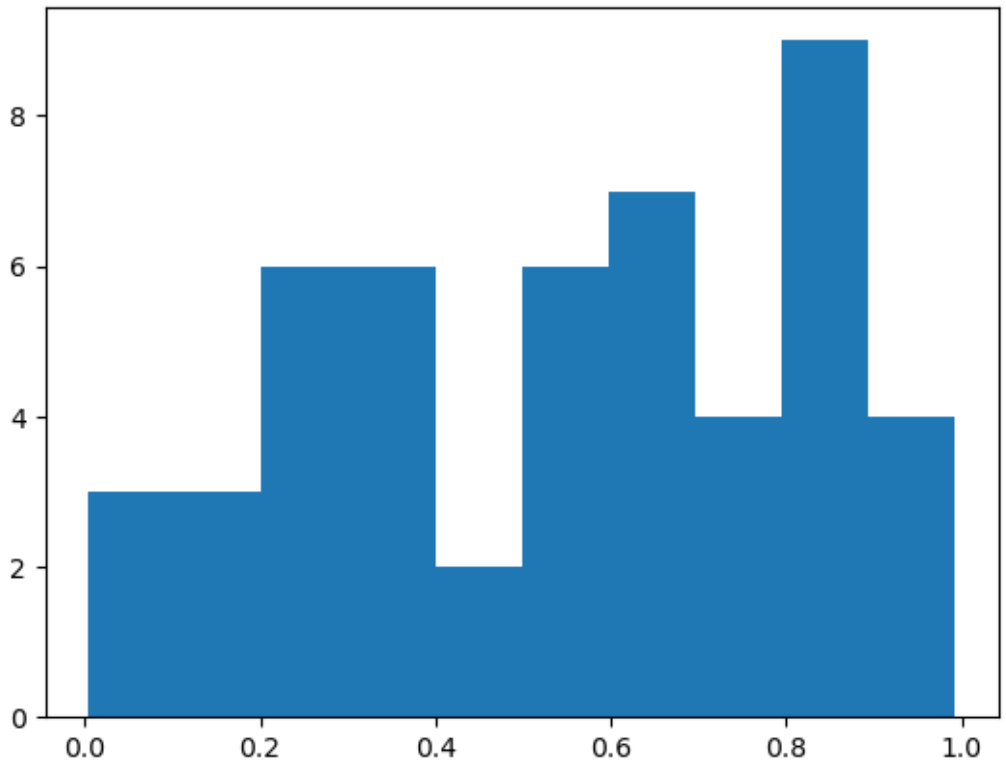
January 23, 2023

[ ]:
```
import random
import numpy as np
import matplotlib.pyplot as plt
```

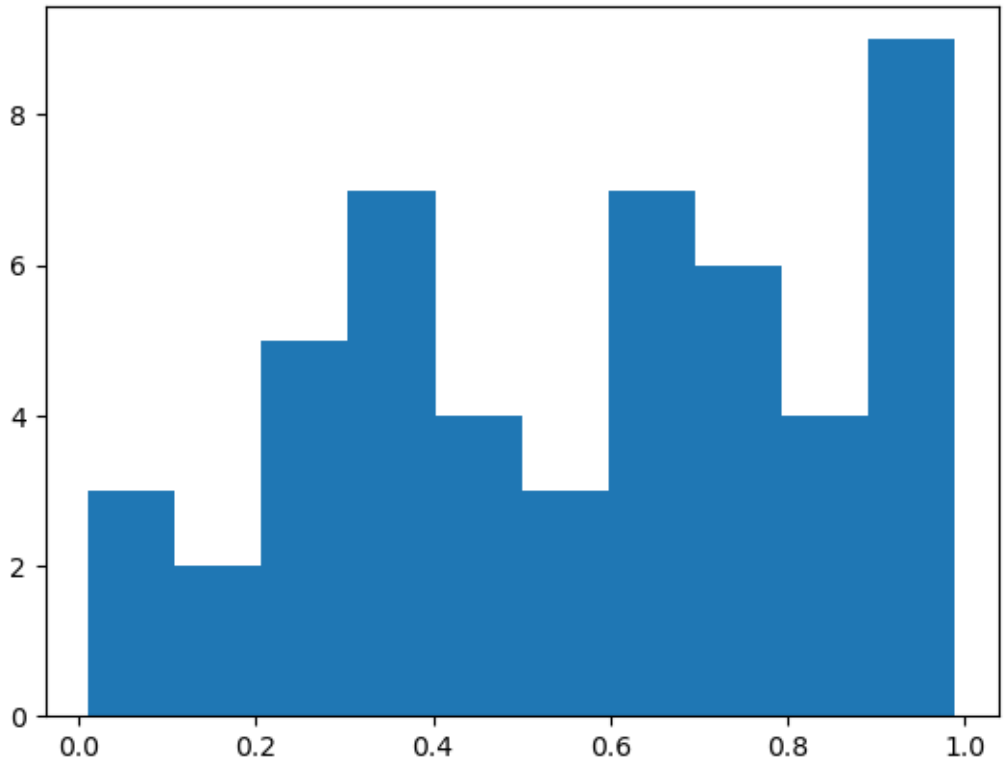
[ ]:
```
# define class name
class ToyData:
    # create constructor
    def __init__(self,size):
        # size is a field inputed by the user when calling the class
        self._size = size
        # create empty list called data to append random numbers (generated later) to
        self._data = []

    # create generate method
    def __generate__(self):
        # create for loop that will pull a certain amount of random numbers (determined by "size") between 0 and 1
        for i in range(self._size):
            # using random.random to pull random numbers between 0 and 1
            self._data.append(random.random())
        # returning final list of random numbers in the form of a list called "data"
        return self._data

    # create display method
    def __display__(self):
        return plt.hist(self._data)

# main statement for testing
def main():
    # create for loop to test various random samples of 50 5 times
    for i in range(5):
        i = ToyData(50)
        # print statement to provide clarity
        print("Below are the random numbers generated between 0 and 1:")
        print(i.__generate__())
```

```
        # print statement to provide clarity
        print("Below is a histogram reflecting the values in _data:")
        i.__display__()
        plt.show()

main()
```

```
Below are the random numbers generated between 0 and 1:
[0.6594590297339804, 0.30099733316644217, 0.6664504688353007,
0.21061413521465755, 0.8219773535341719, 0.3645250305078337, 0.2886145785318702,
0.5154786401911596, 0.8517742453136846, 0.07025721208712388, 0.8866521217330294,
0.7393403167064104, 0.5871985114260816, 0.3802348038260225, 0.21566928781342842,
0.31710866164224116, 0.21439245224674575, 0.19796996714645831,
0.9804263572396392, 0.1878463831720073, 0.6236466817038339, 0.8182610088069975,
0.8921821060799516, 0.8134435631624141, 0.875300608515097, 0.8661939396233311,
0.9917403851953871, 0.4705257099074006, 0.28969453182427074, 0.602523356576148,
0.7044794767808706, 0.29314118965211655, 0.38412576075957494,
0.004318212511043029, 0.7530584249822396, 0.7176022399628066,
0.9073554566820179, 0.45091462060867915, 0.5882805348936773, 0.6444170719188603,
0.5196609972085994, 0.5411755204402448, 0.8953859530658468, 0.18676191397027564,
0.606784484182159, 0.8359445364459588, 0.37316017736380025, 0.5060435520346088,
0.6583470448527577, 0.00834883666458075]
Below is a histogram reflecting the values in _data:
```

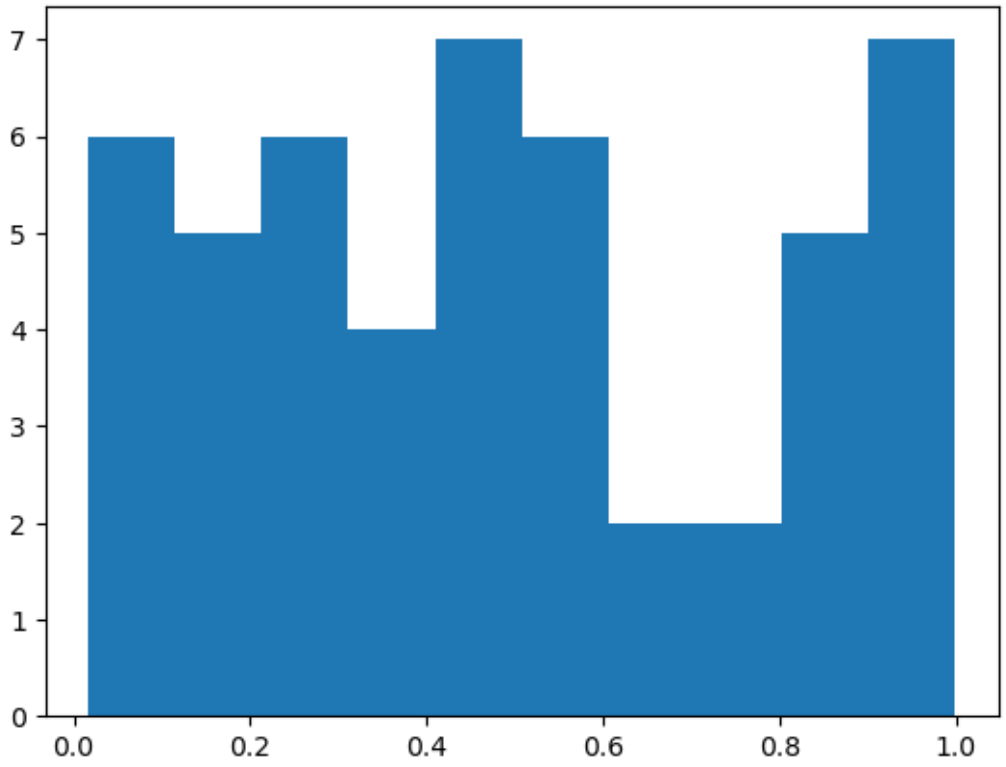


Below are the random numbers generated between 0 and 1:
[0.877436443735182, 0.5301446472765946, 0.9619479545732142, 0.9334492518573047,
0.703967066166739, 0.975858473200265, 0.3629653394005986, 0.29646770981453185,
0.30183478114339735, 0.48071352814552804, 0.7990767178293641,
0.3029897766825632, 0.6391505600117208, 0.46856671542269424, 0.5184992275071008,
0.4365705956725028, 0.91592753775685, 0.6956309359360029, 0.6837696940144519,
0.9712916973124924, 0.9127853113349818, 0.8802141283201886, 0.6709131607942551,
0.8829307208903754, 0.15069808076748115, 0.7414805669815762, 0.5223310986606888,
0.15935858068013253, 0.02463605890863474, 0.2805308193896362,
0.3637194541088644, 0.43299524395730205, 0.9150934566687535, 0.7835221567000473,
0.29046864789377735, 0.9882754105033267, 0.36256193692944716,
0.6248718462387239, 0.011138052810881094, 0.9065238564002919,
0.3466297984199329, 0.620481127953867, 0.7210867520110458, 0.3857475624663603,
0.3944278528167193, 0.3883785165365232, 0.015864597064375485,
0.6431922338080596, 0.6600281188448635, 0.7227712031468447]
Below is a histogram reflecting the values in _data:



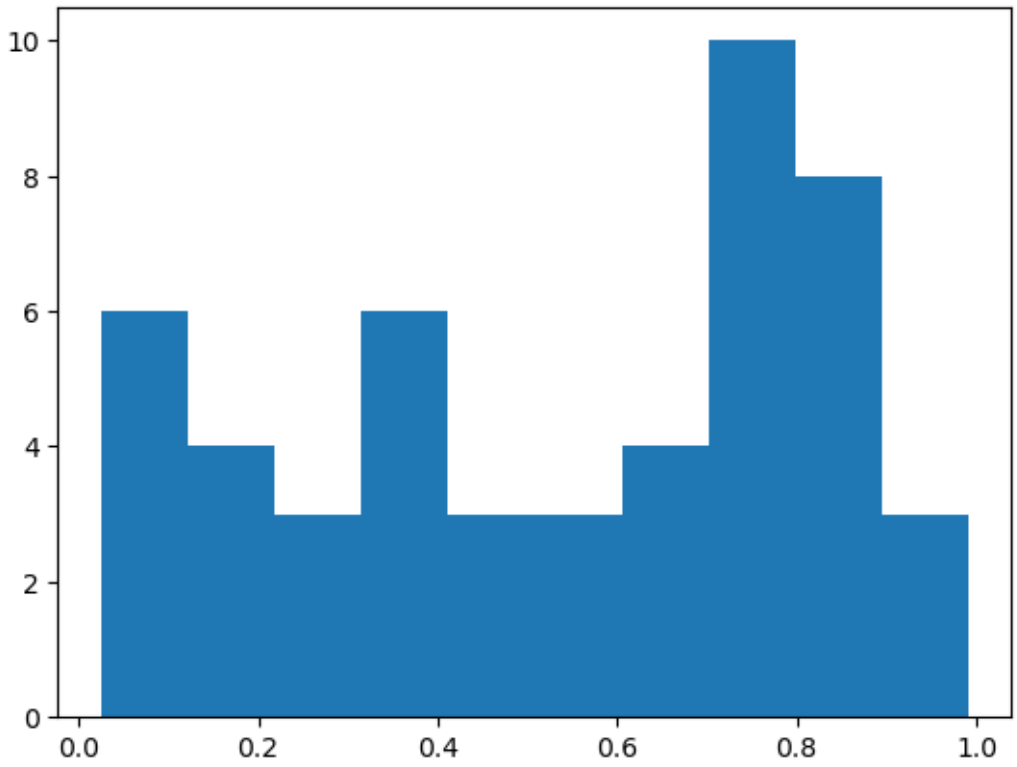
Below are the random numbers generated between 0 and 1:
[0.5199943113748545, 0.20984678222363806, 0.19417329352152624,
0.40123801382861213, 0.44186433698738603, 0.6402639828629223,
0.4115265032713189, 0.47072802647424417, 0.6067987370220836,

0.10505103050515607, 0.2981038996651648, 0.8534104272397598, 0.8426773582067802,
0.9787030576546084, 0.5760717152383097, 0.45173094910961054,
0.016269202170562602, 0.5343599533295756, 0.9628689846677959,
0.9985258287561545, 0.7115731124679183, 0.5908387710367605, 0.4236921828332283,
0.9744344883717215, 0.5580458742976648, 0.06438398783472332,
0.18423029816686454, 0.8637657232390258, 0.279269004265554, 0.7795744533665311,
0.9551059002231347, 0.2565212144724034, 0.07690367314317337, 0.2561629252435401,
0.8536191633864518, 0.14520143370206617, 0.5984324080539051,
0.39382428420142734, 0.2701115870617956, 0.9333523148041492,
0.43299873896433927, 0.2065482443046739, 0.8485679166129322, 0.3963334737463614,
0.94241942540177, 0.2668324000407001, 0.34441494099342096, 0.03255403170579041,
0.02331837898248712, 0.4765088770095519]
Below is a histogram reflecting the values in _data:



Below are the random numbers generated between 0 and 1:
[0.8825058695562159, 0.7060898602299644, 0.40199873417055987,
0.7052689511140892, 0.1685182398258308, 0.7491966358492668, 0.8862940190203658,
0.7908744682307607, 0.6032238050267236, 0.2546892773208583 3,
0.45358026408226293, 0.8408548104659008, 0.6915536582094245,
0.18418990240947297, 0.7698314798287121, 0.5208475531123415, 0.9844890728096128,
0.720951956829248, 0.8844562149033958, 0.5175434196783268, 0.8576734664710228,
0.31873100358358664, 0.03651943139294722, 0.48376694153422917,
0.04065647943086048, 0.15947105225954772, 0.4591183426767642,

0.6710947632066453, 0.7325885853835633, 0.9306656898521031, 0.3672699916921892,
0.3181565056910248, 0.04709041751066545, 0.7573722308139543, 0.2313395957493316,
0.035021885980159206, 0.7234867054740572, 0.805855323887349, 0.1829625609811354,
0.02523120331475248, 0.26460388083008146, 0.35199168989637375,
0.06259400913206303, 0.3821299862438917, 0.609823068629568, 0.9912334041836172,
0.7989895801337744, 0.8133320065490327, 0.7844798347087323, 0.6457475049614634]
Below is a histogram reflecting the values in _data:



Below are the random numbers generated between 0 and 1:
[0.5152620590143355, 0.8172446919045975, 0.28817307402807946,
0.6183845798730813, 0.3130777802419824, 0.9834357673905166, 0.15729268506910588,
0.3930914885494059, 0.9987162031293194, 0.15954425648092874,
0.023623338569113472, 0.8934783091628012, 0.09685471171887594,
0.5969226425108871, 0.9002750721997312, 0.5512688659726138, 0.8035254592048966,
0.29143267536187256, 0.15059285164649205, 0.24698938108367885,
0.03199600194289487, 0.18153694399312115, 0.48292808342411897,
0.5874621358921931, 0.0036710911992087203, 0.6170756357617617,
0.29888408382121445, 0.7853701012016792, 0.6870455636388695, 0.8597472470847903,
0.4678323619185236, 0.5707338857941192, 0.7403109382576983, 0.03823232330034221,
0.0444215527950208, 0.3536274559507411, 0.16445609483159818, 0.7098728849618863,
0.7974766422829161, 0.5334737165356448, 0.7417483469791495, 0.5281048005588275,
0.27580568616441536, 0.33909632401414247, 0.7202192470382077,
0.9984335378328743, 0.9101999154348945, 0.6533112438192629, 0.8976329615733896,

0.47948111628790147]
Below is a histogram reflecting the values in _data: